Office for National Statistics

Article

Productivity economic commentary, UK: January to March 2021

The main findings from official statistics and analysis of UK productivity, presenting a summary of recent developments.

Table of contents

1 . Main points

Labour productivity

- Output per hour in Quarter 1 (Jan to Mar) 2021 increased by 0.9% compared with the same quarter a year ago because of differing rates of decline in gross value added (GVA) and total hours worked.

- Output per worker fell by 4.7% quarter-on-year, reflecting workers retaining employment through the Coronavirus Job Retention Scheme (CJRS), while not producing output.

Multi-factor productivity

- In Quarter 1 2021, multi-factor productivity (MFP) increased by 0.4% compared with the same quarter a year ago.

Public service productivity

- Public service productivity has fallen 0.8% compared with the previous quarter, Quarter 4 (Oct to Dec) 2020, because of strong growth in public service inputs of 2.1%.

- Public service output is back above the pre-coronavirus (COVID-19) pandemic level of the full year 2019, growing 1.3% in Quarter 1 2021.

Productivity estimates use the Labour Force Survey (LFS), among other sources. Statistics in this release do not reflect changes to the weighting methodology for LFS to account for changes in population estimates. We expect the change to lead to a small upward revision to productivity growth in 2020. More details will be published on 8 July 2021.

2 . Latest statistics

Throughout Quarter 1 (Jan to Mar) 2021, coronavirus (COVID-19) restrictions placed much of the UK in lockdown. These economic restrictions tended to temporarily close large parts of less productive industries in the economy. Movements during 2020 and 2021 are volatile and subject to increased uncertainty. As such, we recommend looking at longer term trends in productivity growth.

Figure 1 displays key productivity statistics and how they have changed since the start of the pandemic.

Figure 1: Recovery from the initial effects of coronavirus has varied across productivity estimates

Various productivity measures, UK, index 2019=100, Quarter 1 2019 to Quarter 1 2021

Notes:

1. Multi-factor productivity estimates presented in this publication are computed with a new methodology accounting for the reduced use of capital in the production processes of firms because of government restrictions.

Download the data

Output per hour grew by 0.9% quarter-on-year, now 0.5 percentage points (pp) above pre-coronavirus levels (2019 average) in the full year 2019. For more information, see section 3.

Output per worker fell by 4.7% quarter-on-year, still 7.7 pp below pre-coronavirus levels. This reflects the impact of the Coronavirus Job Retention Scheme (CJRS), which allows people to remain employed while working zero hours. See our previous release for more information.

Experimental analysis that excludes furloughed workers suggests that output per job among those still working was 9.2% higher on average in Quarter 1 2021 than a year before (7.5pp above pre-coronavirus levels). This indicates that furloughed workers were more likely to work in lower productivity industries, with higher productivity individuals and industries still working to a greater degree, pushing up aggregate productivity.

Multi-factor productivity (MFP) grew by 0.4% quarter-on-year, making it only slightly below the pre-coronavirus level (0.6 pp). Capital services and quality adjusted labour input (QALI) both fell slightly as hours fell due to lockdown restrictions. This follows two quarters of relatively strong growth. For more information, see section 5.

Recovery in public service productivity stalled in Quarter 1 2021. It suffered a large fall in Quarter 2 (Apr to June) 2020, during the first lockdown, because of widespread school closures and cancellations of medical appointments. In the second half of 2020 it experienced a recovery thanks to strong growth in output. This was fuelled by the reopening of schools, a recovery in healthcare activities, and an adjustment made for test, trace and vaccination for NHS Test and Trace activities (more information can be found in our previous release). This quarter, output has surpassed the level seen before the coronavirus pandemic, in the full year 2019, by 2.0%. However, productivity remains 13.6% lower than it was pre-coronavirus. For more information, see section 6.

3 . Labour productivity headline measures

Our preferred measure of productivity is output per hour worked quarter-on-year growth, which increased by 0.9% in Quarter 1 (Jan to Mar) 2021. Figure 2 decomposes this estimate, showing this rise is because total hours worked fell faster (7.1%) than gross value added (GVA) (6.2%), resulting in more output per hour worked. Recent recoveries of GVA and total hours worked from the initial effects of the coronavirus (COVID-19) pandemic were hindered by a further lockdown.

Figure 2: Output per hour grew 0.9% quarter-on-year

Whole economy output per hour, quarter-on-year percentage growth rates, seasonally adjusted, Quarter 3 (July to Sept) 2009 to Quarter 1 (Jan to Mar) 2021, UK

Percentage

| | Hours (sign reversed) | GVA | Output per hour |
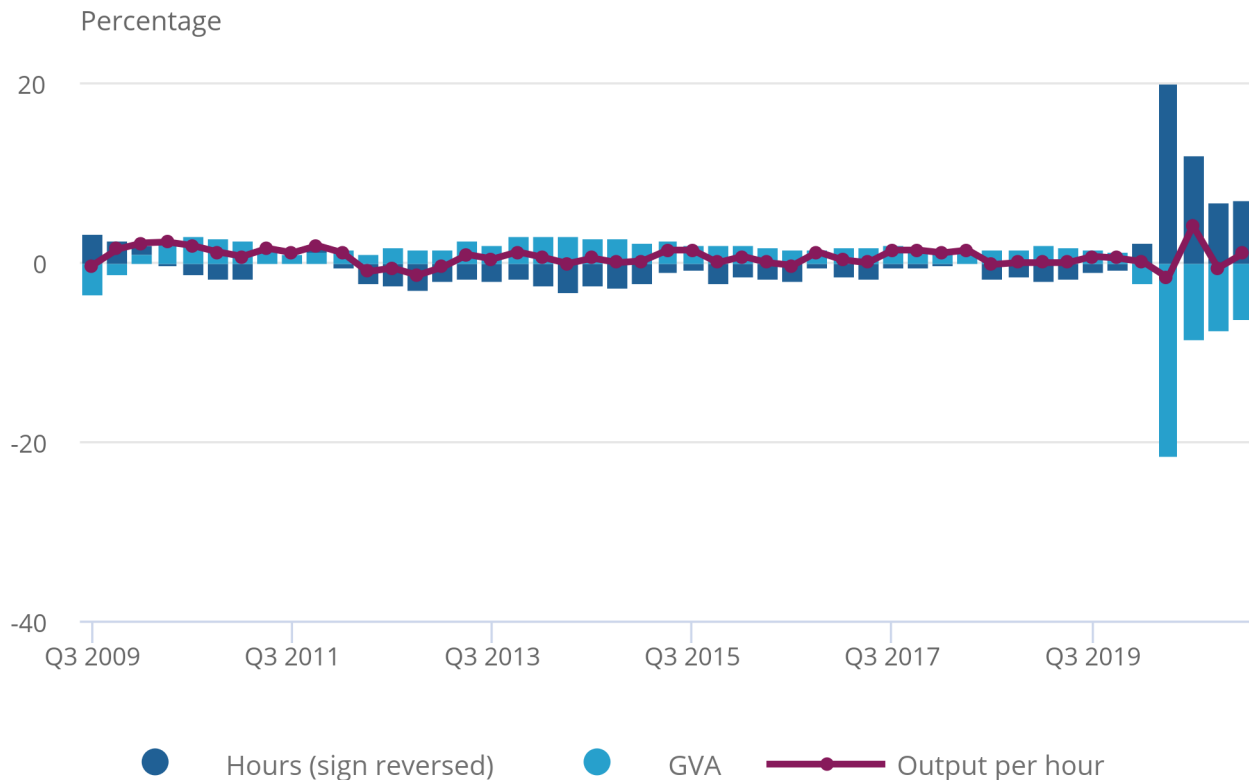
Source: Office for National Statistics

Notes:

1. Estimates of hours worked are sign reversed to reflect how they affect negatively affect productivity.

4 . Labour productivity by industry

Figure 3 shows each industry's contribution to whole economy output per hour growth and a positive allocation effect (2.7pp), indicating a move of activities from less productive industries to more productive industries. This is a continued feature of productivity during the pandemic; see our previous release for further analysis.

There is also likely to be a positive allocation effect within the wholesale and retail industry, because of a move to more productive online sales, making it the largest positive contributor of any industry (0.6pp). Conversely, the public services industry was the largest negative contributor (1.4pp), in line with the fall in public service productivity (see section 6).

Figure 3: The allocation effect was the largest contributor to output per hour growth

Contributions to quarter-on-year output per hour growth, seasonally adjusted, UK, Quarter 1 (Jan to Mar) 2021
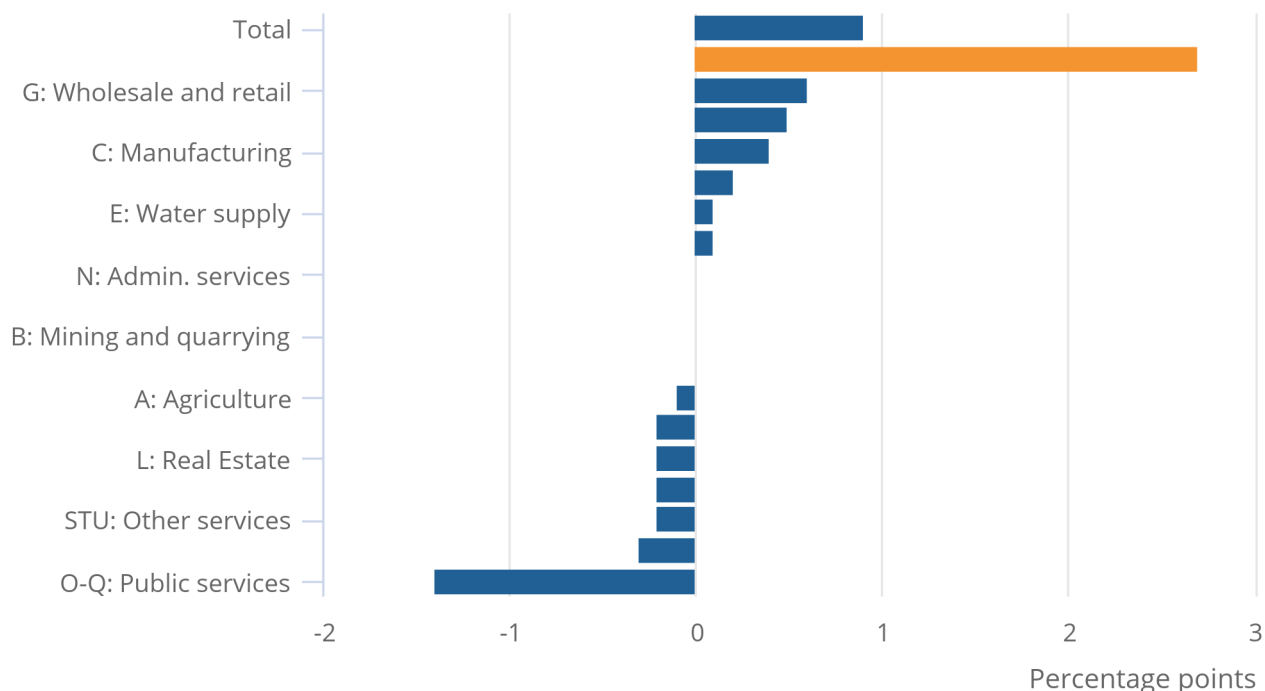
Source: Office for National Statistics

Notes:

1. Output per hour growth for an industry can be larger than its contribution to whole economy productivity growth, depending on the relative size of the industry.

5 . Multi-factor productivity

Labour productivity growth in the market sector can be decomposed into capital deepening (the amount of capital available per hour worked), labour composition (the skills of the workforce) and multi-factor productivity (MFP) (how well inputs are used in the production process).

Figure 4 shows a 4.6% quarter-on-year increase in market-sector productivity in Quarter 1 (Jan to Mar) 2021. This is because of growth in capital deepening (2.2%), labour composition (2%) and multi-factor productivity (0.4%).

Figure 4: Changes in multi-factor productivity drive changes in labour productivity in most industries

Decomposition of market-sector productivity growth by industry into capital deepening, labour composition and multi-factor productivity, UK, Quarter 1 (Jan to Mar) 2020 to Quarter 1 (Jan to Mar) 2021

Figure 4: Changes in multi-factor productivity drive changes in labour productivity in most industries

Decomposition of market-sector productivity growth by industry into capital deepening, labour composition and multi-factor productivity, UK, Quarter 1 (Jan to Mar) 2020 to Quarter 1 (Jan to Mar) 2021
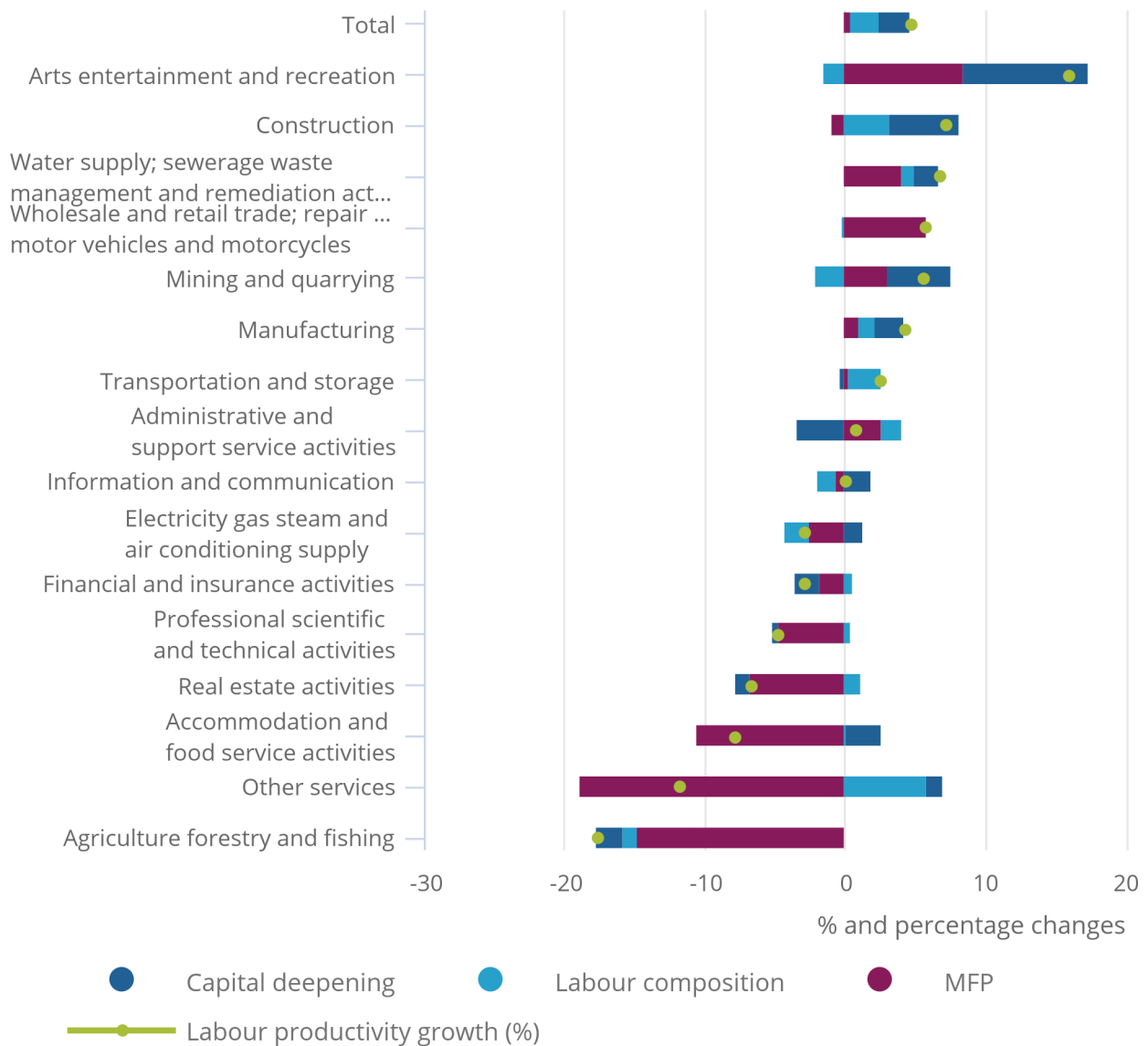
Source: Office for National Statistics

Notes:

1. Multi-factor productivity estimates presented in this publication account for reduced capital utilisation levels due to government restrictions.

The changes vary considerably among different industries, indicating that the productivity shock from the coronavirus (COVID-19) pandemic has had an uneven effect in the market sector. Some industries saw an increase in labour composition, as lower educated workers were more likely to be furloughed, pushing up the estimated average skill level of the active workforce. Increases in MFP may indicate an industry's ability to adapt to restrictions by offering new products and services or changing how they operate. Falls in MFP may indicate industries hampered by restrictions or challenges in adapting to falls in demand.

At the whole market-sector level both capital deepening and labour composition have positively contributed to labour productivity growth, by 1.5 and 2.5 percent respectively, since Quarter 4 (Oct to Dec) 2019. If this strong contribution is sustained it could have a positive effect on productivity growth when economic activity fully resumes. However, if this unwinds as the economy returns to normal, this could drag on aggregate productivity.

Figure 5: The increase in capital deepening and labour composition of Quarter 2 (Apr to June) 2020 is preserved

Decomposition of market-sector quarter-on-quarter productivity growth into capital deepening, labour composition and multi-factor productivity, UK, Quarter 1 (Jan to Mar) 2019 to Quarter 1 (Jan to Mar) 2021

Figure 5: The increase in capital deepening and labour composition of Quarter 2 (Apr to June) 2020 is preserved

Decomposition of market-sector quarter-on-quarter productivity growth into capital deepening, labour composition and multi-factor productivity, UK, Quarter 1 (Jan to Mar) 2019 to Quarter 1 (Jan to Mar) 2021
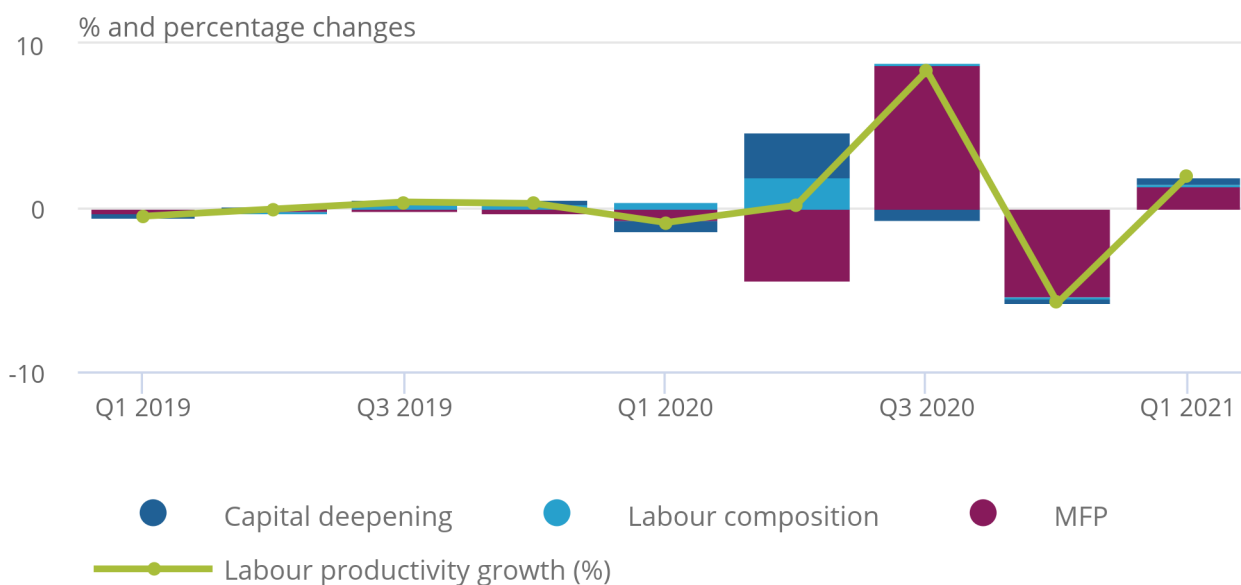
Source: Office for National Statistics

Notes:

1. Multi-factor productivity estimates presented in this publication account for reduced capital utilisation levels due to government restrictions.

6 . Public service productivity

Compared with the previous quarter, public service productivity has fallen 0.8% in Quarter 1 (Jan to Mar) 2021. This follows two quarters of strong productivity growth, signalling a slow-down in the recovery of public service productivity since the most severe effects of the coronavirus (COVID-19) pandemic were felt in Quarter 2 (Apr to June) 2020. The fall in productivity is caused by inputs growth being higher than output growth.

Public service output grew 1.3% compared with the previous quarter. Output is now higher than it was in Quarter 4 (Oct to Dec) 2019, exceeding pre-coronavirus levels. The growth in output this quarter has been constrained by the national lockdowns imposed from January 2021, which saw widespread school closures and falls in the number of GP appointments, elective surgeries and A&E admissions. However, as shown in Figure 6, the impact of the national lockdowns on public service output has been far less severe than seen previously, partly because of the start of the COVID-19 vaccination programme.

Figure 6: The recovery in public service productivity has stalled this quarter due to inputs growing faster than output

Quarterly growth rates in public service output, inputs and productivity, UK, Quarter 1 (Jan to Mar) 2019 to Quarter 1 (Jan to Mar) 2021

Download the data

Annual public service productivity is estimated to fall by 15.4% in 2020 compared with 2019. More accurate estimates at an annual level for 2020 will be published in 2023 in our annual public service productivity estimate, which is badged as a National Statistic.

7 . Data

Labour Productivity Tables 1 to 8 and R1
Dataset LPROD01 | Released 7 July 2021
Estimates of main productivity metrics, corresponding to tables from the PDF version of the statistical bulletin.

Productivity jobs, productivity hours, market sector workers, market sector hours
Dataset LPROD02 | Released 7 July 2021
Underlying labour inputs behind the labour productivity estimates by industry and industrial sector as defined by the Standard Industrial Classification (SIC). Contains statistics on productivity jobs, productivity hours and market sector workers. These statistics are the main intermediates in producing output per worker and output per hour statistics.

Breakdown of contributions, whole economy and sectors
Dataset PRODCONTS | Released 7 July 2021
Provides estimates of contributions to labour productivity (measured as output per hour) using the "Generalised Exactly Additive Decomposition" (GEAD) methodology as described in Tang and Wang (2004), UK. Contains data on total worked hours, gross value added (GVA) estimates, output per hour series and prices deflators. Includes data disaggregated by sector. Also contains quarter on quarter, quarter-on-same-quarter a year ago and annual formats for selected outputs.

Multi-factor productivity estimates
Dataset MFP01 | Released 7 July 2021
Indices and log changes for gross value added (GVA), multi-factor productivity, implied factor prices, hours worked, labour composition, capital services and GVA per hour worked.

Public service productivity, quarterly
Dataset | Released 7 July 2021
Includes quarterly, annual and revisions tabs to see the picture for UK public service productivity and also to see how much has changed in the data.

Unit labour costs
Dataset | Released 7 July 2021
Unit labour costs and revisions from previously published estimates, UK.

8 . Glossary

Labour productivity

Labour productivity measures how many units of labour input is needed to produce a unit of output, and is calculated by dividing output by labour input.

Labour inputs

The preferred measure of labour input is hours worked ("productivity hours"), but workers and jobs ("productivity jobs") are also used.

Output

Output refers to gross value added (GVA), which is an estimate of the volume of goods and services produced after subtracting the volume of intermediate goods and services used in the production process (intermediate consumption). It is measured by industry, and in aggregate across industries for the UK

Multi-factor productivity

For any given change in output, multi-factor productivity (MFP) measures the amount that cannot be accounted for by changes in inputs of quality-adjusted labour and capital.

Capital deepening

Capital deepening measures the amount of capital services available per hour worked. If the amount of capital services per hour worked is increasing it is referred to as capital deepening, and when the amount of capital services per hour worked is reducing it is referred to as capital shallowing.

Labour composition

Labour composition measures the characteristics of the labour used in the production process. The labour measure used in multi-factor productivity is quality-adjusted labour input (QALI), which splits the hours worked data using four categories: industry, age, sex and education.

Public service productivity

Productivity of public services is estimated by comparing growth in the total amount of output with growth in the total amount of inputs used. Growth rates of output and inputs for individual service areas are aggregated by their relative share of total government expenditure (expenditure weight) to produce estimates of total public service output, inputs and productivity. Service areas are defined by Classification of the Functions of Government (COFOG).

9 . Measuring the data

On 8 July 2021 the Office for National Statistics (ONS) will publish an article giving indicative estimates of headline measures from the Labour Force Survey (LFS) based on improved weighting methodology. Full results will be published on 15 July 2021. We will publish an account of how these changes impact productivity statistics later this year and will incorporate the changes into our productivity statistics starting with the flash labour productivity estimates on 17 August 2021.

The measure of output used in these statistics is the chained volume (real) measure of gross value added (GVA) at basic prices.

Multi-factor productivity (MFP) estimates are compiled using the growth accounting framework, which decomposes changes in economic output (in this case, GVA of the UK market sector), into contributions from changes in measured inputs: labour, capital and the residual element MFP. For more information, see our simple guide to MFP and our MFP QMI.

Information on data used in public service productivity can be found in our previous release and in Sources and methods for public service productivity estimates.

This release reflects revisions to GVA and income data resulting from quarterly national accounts, affecting time periods since 2018. Revisions to the current data also reflect revisions to jobs data affecting Quarter 4 (Oct to Dec) 2020. Revisions resulting from seasonal adjustment affect all periods.

Developments

The Office for Statistics Regulation (OSR) conducted an assessment of the Office for National Statistics' (ONS) productivity statistics in early 2021. In response, we have produced an "action plan" to address the requirements in the report. We have posted the action plan under the "Productivity" topic on StatsUserNet - a platform for users and producers of official statistics, run by the Office for National Statistics. We welcome user feedback on the OSR's report or the action plan to productivity@ons.gov.uk.

Alongside this release we have published estimates of labour productivity by country and region of the UK, including industry-by-region. Annual estimates of labour productivity for more detailed geographic breakdowns of the UK up to 2019 will be published later on this summer, following a short delay. We intend to introduce a series of quarterly regional labour productivity estimates from 4 August 2021.

Data in this release, and in the sub-national productivity estimates published alongside, are consistent with Blue Book 2020 data. They therefore do not reflect revisions outlined in our recent article on the impact of Blue Book 2021 changes (including double deflation) on labour productivity. Those changes will be implemented in quarterly productivity estimates from October 2021, after the quarterly national accounts in September 2021.

10 . Strengths and limitations

All data in this release were collected during the lockdown that was imposed because of the coronavirus (COVID-19) pandemic. During this period there have been additional challenges to collecting labour market data, capital data and estimating gross domestic product (GDP). As a result, the estimates are subject to increased uncertainty and there is a likelihood of larger revisions than usual in future releases of these measures.

More information on the strengths and limitations of the data, as well as the quality and accuracy of the data, is available in the Labour productivity QMI for the labour productivity estimates, the Multi-factor productivity (MFP) QMI for the MFP estimates, and the Public service productivity: total, UK QMI for the public service productivity (PSP) estimates. Further information is available in Sources and methods for public service productivity estimates.

11 . Related links

[GDP quarterly national accounts, UK: January to March 2021](#)
Bulletin | Released 31 March 2021
Revised quarterly estimate of gross domestic product (GDP) for the UK. Uses additional data to provide a more precise indication of economic growth than the first estimate.

[Labour market overview, UK: June 2021](#)
Bulletin | Released 23 March 2021
Estimates of employment, unemployment, economic inactivity and other employment-related statistics for the UK.

[Regional labour productivity, including industry by region, UK: 2019](#)
Bulletin | Released 7 July 2021
Regional output per hour and output per job, and an experimental analysis of the performance of output per hour levels and growth by industry and region.

[Public service productivity: total, UK, 2018](#)
Article | Released 14 April 2021
Updated measures of output, inputs and productivity for public services in the UK between 1997 and 2018. Includes service area breakdown, as well as impact of quality adjustment and latest revisions.

[Public service productivity, adult social care, England: financial year ending 2020](#)
Article | Released 7 July 2021
Trends in the inputs, output and productivity of publicly funded adult social care.